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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,665	05/27/2005	Rudolf Linde	3081.117US01	9835
24113 7590 01/30/2009 PATTERSON, THUENTE, SKAAR & CHRISTENSEN, P.A. 4800 IDS CENTER 80 SOUTH 8TH STREET MINNEAPOLIS, MN 55402-2100				
EXAMINER				
WONG, EDNA				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
01/30/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/536,665

**Applicant(s)**

LINDE ET AL.

**Examiner**

EDNA WONG

**Art Unit**

1795

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 10-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 1, 2008 has been entered.

***Claim Rejections - 35 USC § 112***

Claims **10-15** are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: between the structured hard chrome layer and the chromium.

**Claim 10**

line 1 (*preamble*), recites "a structured hard chrome layer."

line 2 (*body*), recites "chromium."

line12 (*body*), recites "the structured hard chrome layer."

line 13, (*body*), recites "said hard chrome layer."

The hard chrome layer recited in claims 12 and 13 is the latter mention(s) of an element referable to its earlier recitation in the preamble and not to the chromium in line 2 in the body of the claim.

***Claim Rejections - 35 USC § 103***

Claims **10-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **EP 1,205,582** ('582) and **Horsthemke** (US Patent No. 6,837,981 B2) in combination with **Chessin et al.** (US Patent No. 4,588,481).

*Horsthemke is the English equivalent of EP '582.*

Horsthemke teaches a method of producing a structured hard chrome layer, comprising electrodepositing chromium from an electrolyte (= to deposit a chromium alloy from an electrolyte) [col. 2, lines 27-35] onto a workpiece (= a steel body) [col. 5, line 66; and col. 6, lines 20-21, 31 and 43-45], said electrolyte comprising:

(a) a Cr(VI) compound in an amount corresponding to 50 g/l to 600 g/l of chromic acid anhydride (= chromic acid in an amount from 100 g/L to 400 g/L) [col. 4, lines 44-45];

(b) 0.5 g/l to 10 g/l of sulphuric acid (= sulfuric acid in an amount from 1 g/L to 6 g/L) [col. 4, lines 45-47];

(c) 1 g/l to 20 g/l of aliphatic sulphonic acid, that comprises 1 to 6 carbon atoms (= short-chain aliphatic sulfonic acids, their salts and/or derivatives are added to the electrolyte in a concentration over 0.1 g/L) [col. 4, lines 50-53]; and

(d) 10 g/l to 200 g/l of at least one compound forming a dense cathode film (= relevant isopolyanion-forming metal is added to the electrolyte in amounts from about 1 g/L up to the limit of solubility) [col. 4, lines 58-61], said compound

being selected from the group consisting of ammonium molybdate, alkali molybdate, alkaline earth molybdate, ammonium vanadate, alkali vanadate, alkaline earth vanadate, ammonium zirconate, alkali zirconate and alkaline earth zirconate (= molybdic acid (ammonium molybdate), an alkali molybdate and ammonium metavanadate) [col. 4, line 62 to col. 5, line 6].

The Cr(VI) compound is  $\text{CrO}_3$  (= chromic acid) [col. 4, lines 44-45].

The aliphatic sulphonic acid is methane sulphonic acid (col. 6, lines 3-4, 25 and 32).

The compound forming a dense cathode film is  $(\text{NH}_4)_6\text{Mo}_7\text{O}_{24} \cdot 4\text{H}_2\text{O}$  (= ammonium molybdate) [col. 4, lines 62-65].

The electrolyte comprises substantially no fluorides (col. 5, line 65 to col. 6, line 5; and col. 6, lines 20-38).

The method further comprises applying a current density of from  $20 \text{ A/dm}^2$  to  $200 \text{ A/dm}^2$  to the workpiece (= a current density operating range of 20-50  $\text{A/dm}^2$ ).

The method of Horsthemke differs from the instant invention because Horsthemke does not disclose the following:

a. Wherein the cathodic current yield in the production of the structures hard chrome layer is 12% or less, as recited in claim 10.

Horsthemke teaches that:

"The method in accordance with the invention advantageously enables a

reliably adherent, corrosion resistant and glossy layer to be deposited at a high cathode current efficiency. ***Here one preferably operates at a cathode efficiency of at least 15%.*** A coating that is formed in a current density operating range of 20-50 A/dm<sup>2</sup> proved to be especially advantageous. Through advantageous choice of the current density, it is also possible to affect the appearance of the deposited alloys" (col. 5, lines 51-59).

Like Horsthemke, ***Chessin*** teaches that typical hexavalent chromium plating baths are generally intended for "functional" (hard) chromium deposition (col. 1, lines 19-30).

***"Functional hexavalent chromium plating baths containing chromic acid and sulfate as a catalyst generally permit the deposition of chromium metal on the basic metal at cathode efficiencies of between 12% and 16% at temperatures between about 52°C to 68°C and at current densities of from about 30 to about 50 a.s.d. (col. 1, lines 31-36).***

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the cathodic current yield described by Horsthemke with wherein the cathodic current yield in the production of the structures hard chrome layer is 12% or less because a hard chrome layer would have still been deposited at a cathode efficiency of 12% in a hexavalent chromium plating bath containing chromic acid and sulfate at current densities of from about 30 to about 50 a.s.d. as taught by Chessin (col. 1, lines 31-36).

b. Such that said hard chrome layer comprises at least one of a cup-shaped structure, a labyrinth structure, or a column-shaped structure, as recited in claim 10.

The invention as a whole would have been obvious to one having ordinary

skill in the art at the time the invention was made because the Horsthemke combination teaches similar method steps as presently claimed (*i.e.*, *electrodepositing*). Similar processes can reasonably be expected to yield products which inherently have the same properties. *In re Spada* 15 USPQ 2d 1655 (CAFC 1990); *In re DeBlauwe* 222 USPQ 191; *In re Wiegand* 86 USPQ 155 (CCPA 195).

Furthermore, the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by the Applicants. *In re Linter* 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), *cert. denied*, 500 US 904 (1991); and MPEP § 2144.

### **Citations**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

**Johnson et al.** (US Patent No. 5,415,763) is cited to teach that the cathode current efficiency of hexavalent chromium is experimentally found to be in a range of only 8 to 15%, depending on the type of electrolyte, because of the energy required to overcome a semi-protective cathode film before metal is deposited (col. 1, lines 26-34).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDNA WONG whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Art Unit: 1795

/Edna Wong/  
Primary Examiner  
Art Unit 1795

EW  
January 26, 2009